DoD PKI
Automatic Key Recovery

Philip Noble
(520) 538-7608 or DSN 879-7608,
philip.e.noble.civ@mail.mil
U.S. Army Information Systems Engineering Command
Fort Huachuca, AZ 85613-5300
5 Aug 15

The Problem:

One problem in the past with the DoD PKI infrastructure was the inability to recover Common Access Card (CAC) private encryption keys and certificates that were either expired or revoked. This becomes necessary when a CAC is lost and its certificates are revoked or when a CAC and the certificates it contains simply expires and is surrendered to DEERS/RAPIDS before the user's encrypted emails have been decrypted.

An Auto Key Recovery capability has been fielded by DISA to permit holders of new CACs to retrieve encryption keys/certificates from previous cards to permit decryption of old email.

The Solution:

Steps to Recover Private Encryption Keys

The following slides identify steps to recover private encryption keys, escrowed by DISA, from CACs that do not have the "Auto Key Recovery" functionality.

URL for Key Recovery

https://ara-1.c3pki.chamb.disa.mil/ara/Key

Or

https://ara-2.c3pki.den.disa.mil/ara/Key

Or

https://ara-3.csd.disa.mil/ara/Key

Or

https://ara-4.csd.disa.mil/ara/Key

These are the Automatic Key Recovery URLs. They can only be accessed from the .mil network (NIPRNet).

Note: The URL addresses shown above are case sensitive.

When you go to this link, you must identify yourself with PKI credentials. Use ONLY your identity certificate!

At this time open the URL

https://ara-1.c3pki.chamb.disa.mil/ara/Key

Or

https://ara-2.c3pki.den.disa.mil/ara/Key

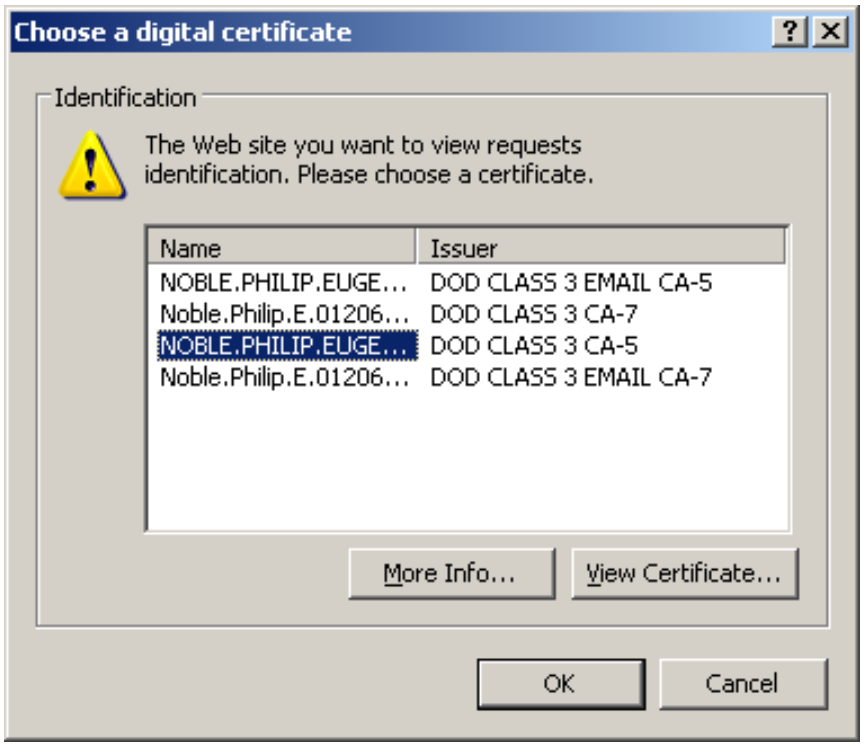
Or

https://ara-3.csd.disa.mil/ara/Key

Or

https://ara-4.csd.disa.mil/ara/Key

Choose Your CAC Identity Certificate

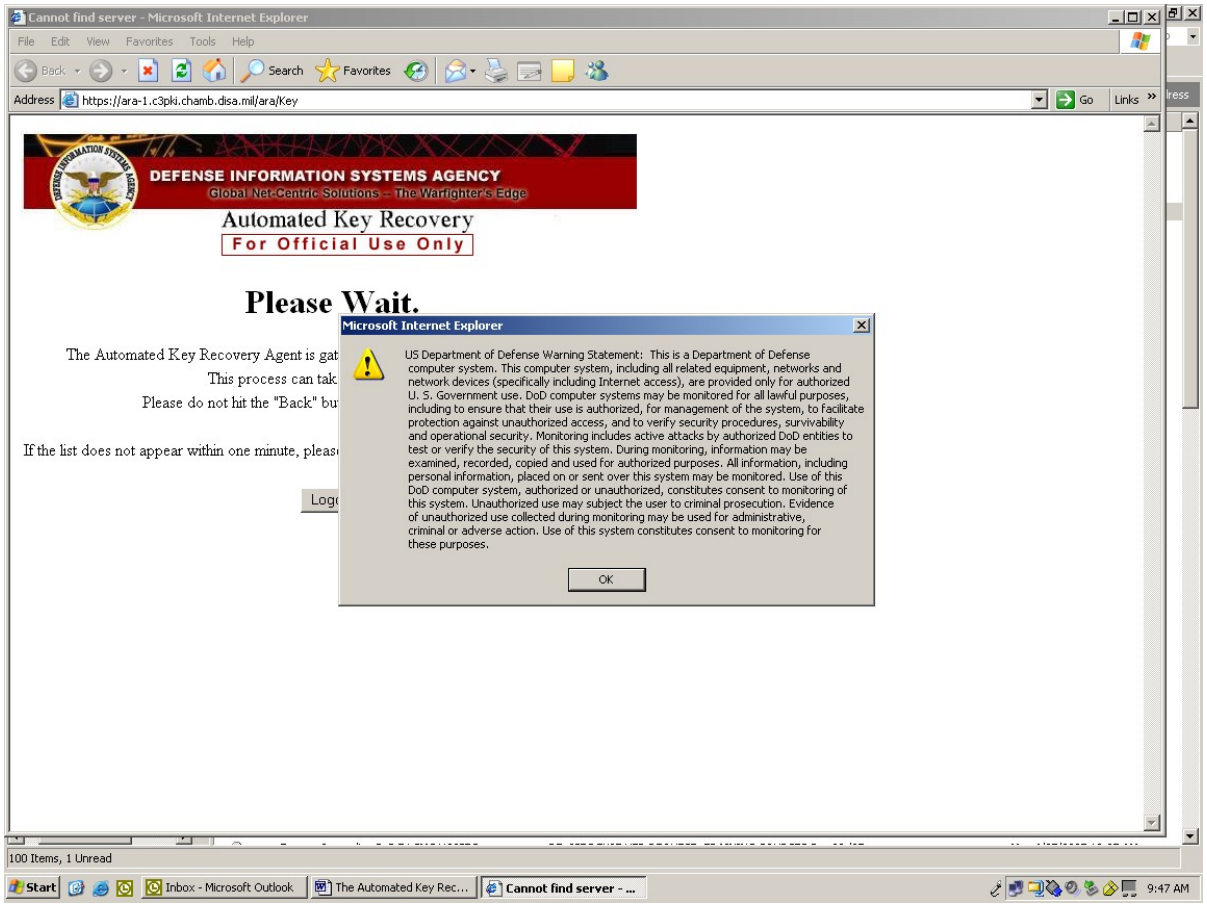


You will be prompted to identify yourself.

Highlight <u>your</u> Identification Certificate from your CAC. Select it by clicking "OK".

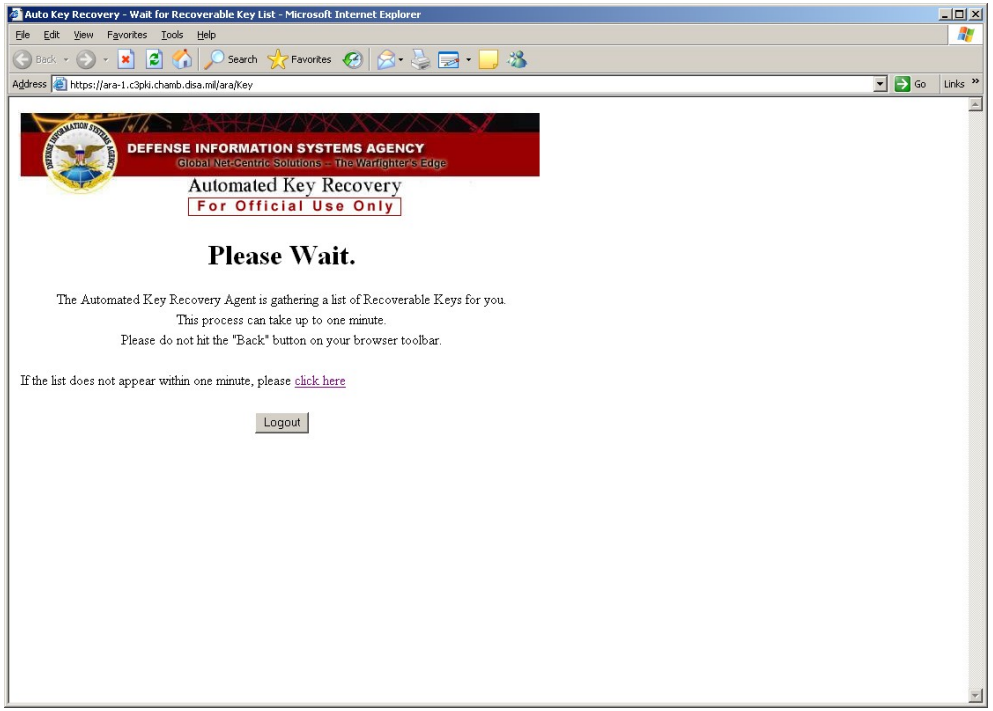
Note: Do NOT choose any that contain the word "EMAIL" from the Issuer column.

Warning Banner


Cannot find server - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address https://ara-1.c3pki.chamb.disa.mil/ara/Key
Go Links
DEFENSE INFORMATION SYSTEMS AGENCY
Global Net-Centric Solutions -- The Warfighter's Edge
Automated Key Recovery
For Official Use Only
Please Wait.
The Automated Key Recovery Agent is gat
This process can tak
Please do not hit the "Back" bu
If the list does not appear within one minute, pleas
Logo
Microsoft Internet Explorer
US Department of Defense Warning Statement: This is a Department of Defense computer system. This computer system, including all related equipment, networks and network devices (specifically including Internet access), are provided only for authorized U. S. Government use. DoD computer systems may be monitored for all lawful purposes, including to ensure that their use is authorized, for management of the system, to facilitate protection against unauthorized access, and to verify security procedures, survivability and operational security. Monitoring includes active attacks by authorized DoD entities to test or verify the security of this system. During monitoring, information may be examined, recorded, copied and used for authorized purposes. All information, including personal information, placed on or sent over this system may be monitored. Use of this DoD computer system, authorized or unauthorized, constitutes consent to monitoring of this system. Unauthorized use may subject the user to criminal prosecution. Evidence of unauthorized use collected during monitoring may be used for administrative, criminal or adverse action. Use of this system constitutes consent to monitoring for these purposes.
OK
100 Items, 1 Unread
Start
Inbox - Microsoft Outlook
The Automated Key Rec...
Cannot find server - ...
9:47 AM

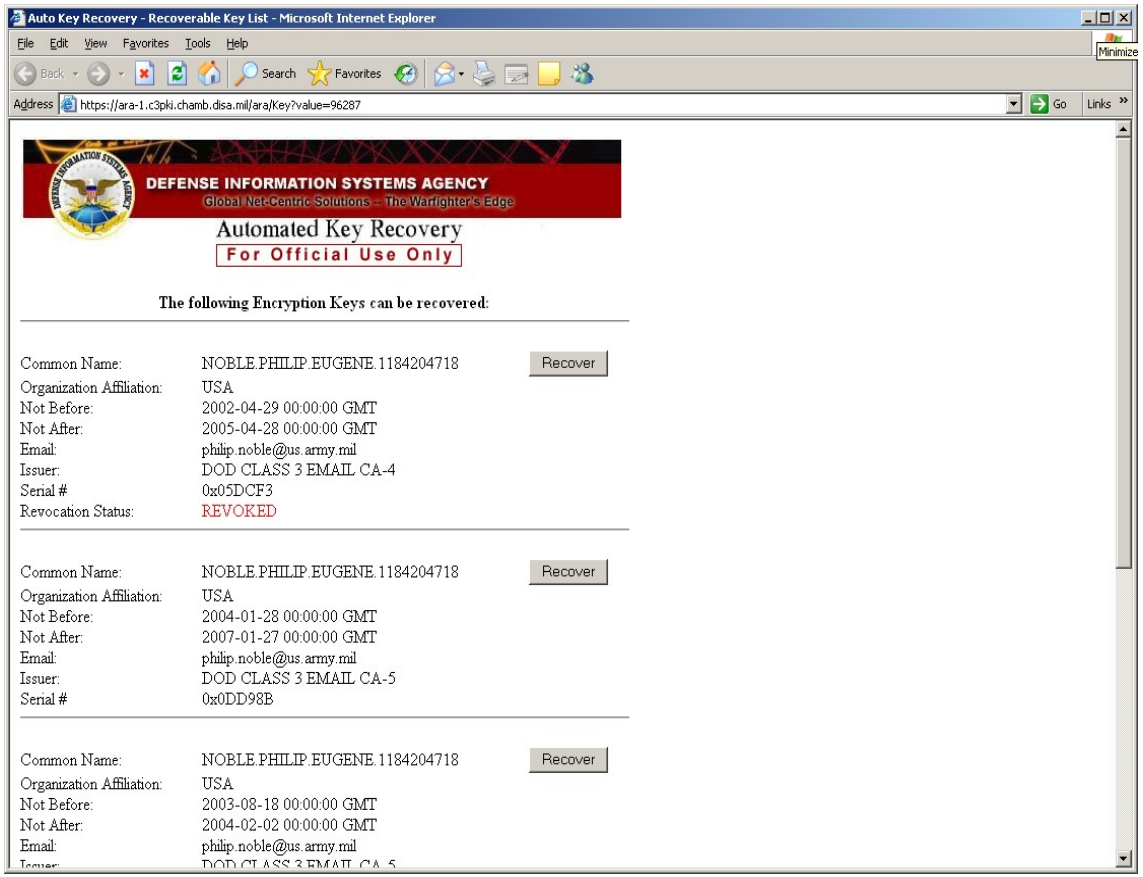
Dismiss the warning by clicking “OK”.

Processing Your Request


Auto Key Recovery - Wait for Recoverable Key List - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address https://ara-1.c3pki.chamb.disa.mil/araj/Key
DEFENSE INFORMATION SYSTEMS AGENCY
Global Net-Centric Solutions -- The Warfighter's Edge
Automated Key Recovery
For Official Use Only
Please Wait.
The Automated Key Recovery Agent is gathering a list of Recoverable Keys for you.
This process can take up to one minute.
Please do not hit the "Back" button on your browser toolbar.
If the list does not appear within one minute, please click here
Logout

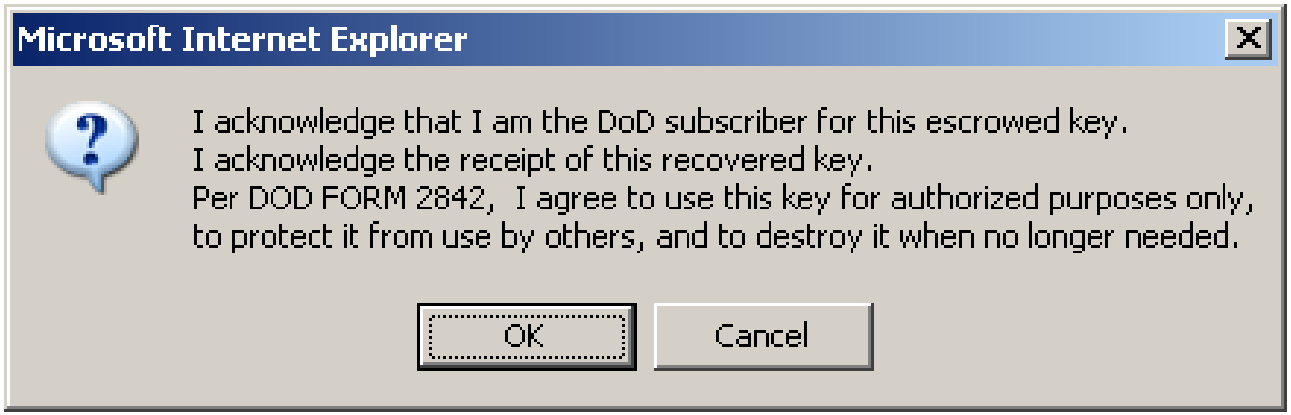
The Automated Key Recovery Agent will compile a list of Recoverable Keys. Should recovery fail or if the key is unable to be downloaded automatically, contact the Army Key Recovery Agent by sending a signed email to: usarmy.pentagon.hqda-cio-g-6.mbx.army-registration-authority@mail.mil requesting recovery of your private email encryption Key. **Please Wait...**

Key Selection



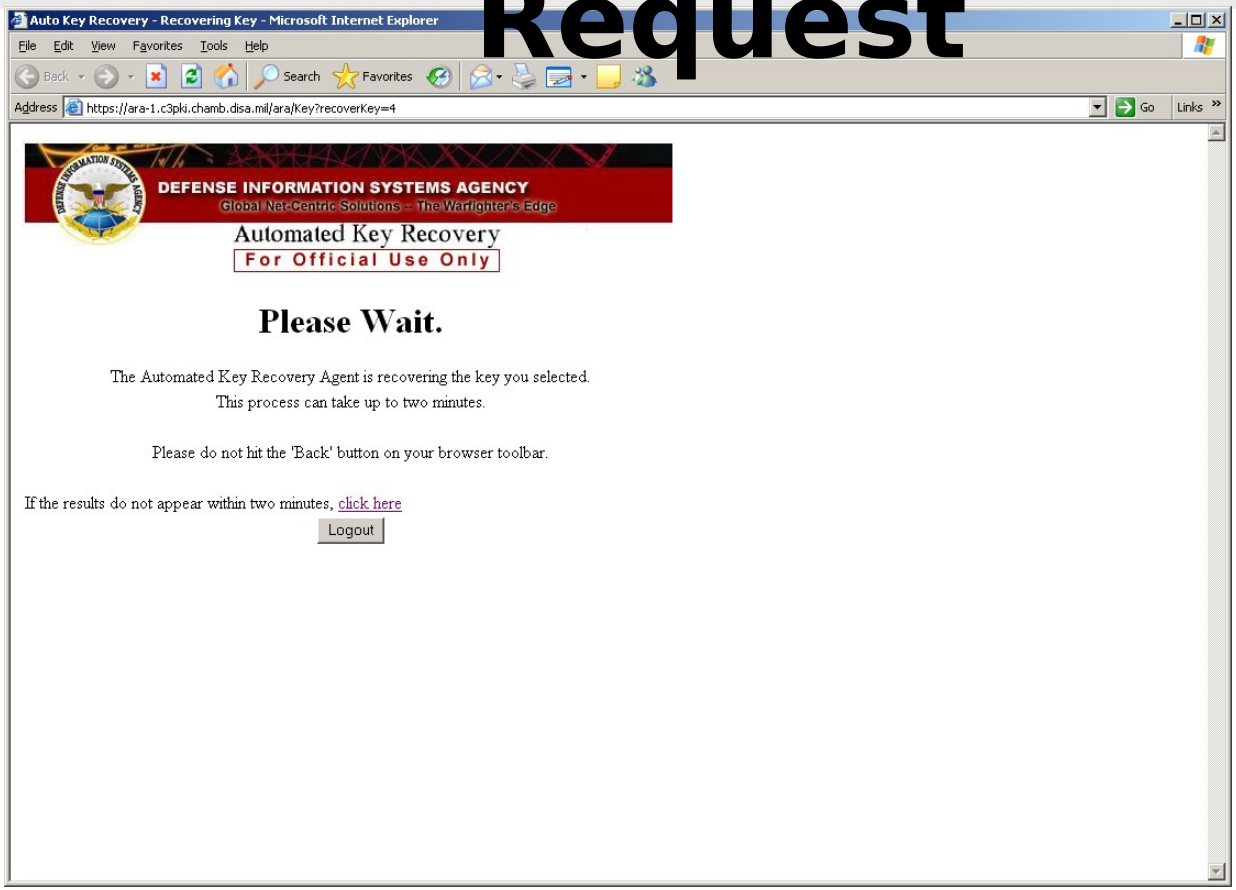
Browse through the list and locate the appropriate key you want to recover. When located, click the adjacent associated "Recover" button.

Acknowledgement of DoD Subscriber


Microsoft Internet Explorer
I acknowledge that I am the DoD subscriber for this escrowed key.
I acknowledge the receipt of this recovered key.
Per DOD FORM 2842, I agree to use this key for authorized purposes only,
to protect it from use by others, and to destroy it when no longer needed.
OK
Cancel

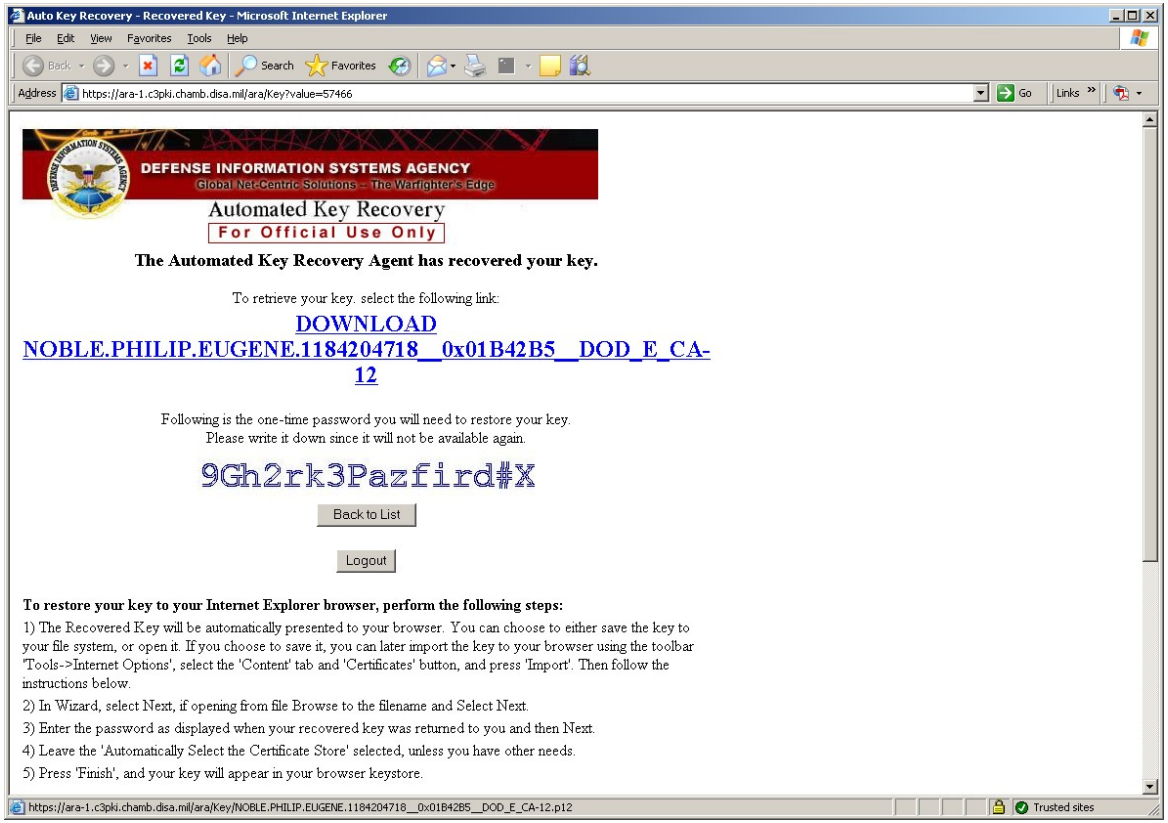
Select "OK".

Processing Request


Auto Key Recovery - Recovering Key - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address https://ara-1.c3pki.chamb.disa.mil/ara/Key?recoverKey=4
Go Links
DEFENSE INFORMATION SYSTEMS AGENCY
Global Net-Centric Solutions -- The Warfighter's Edge
Automated Key Recovery
For Official Use Only
Please Wait.
The Automated Key Recovery Agent is recovering the key you selected.
This process can take up to two minutes.
Please do not hit the 'Back' button on your browser toolbar.
If the results do not appear within two minutes, click here
Logout

The Automated Key Recovery Agent is processing your request. Please Wait...

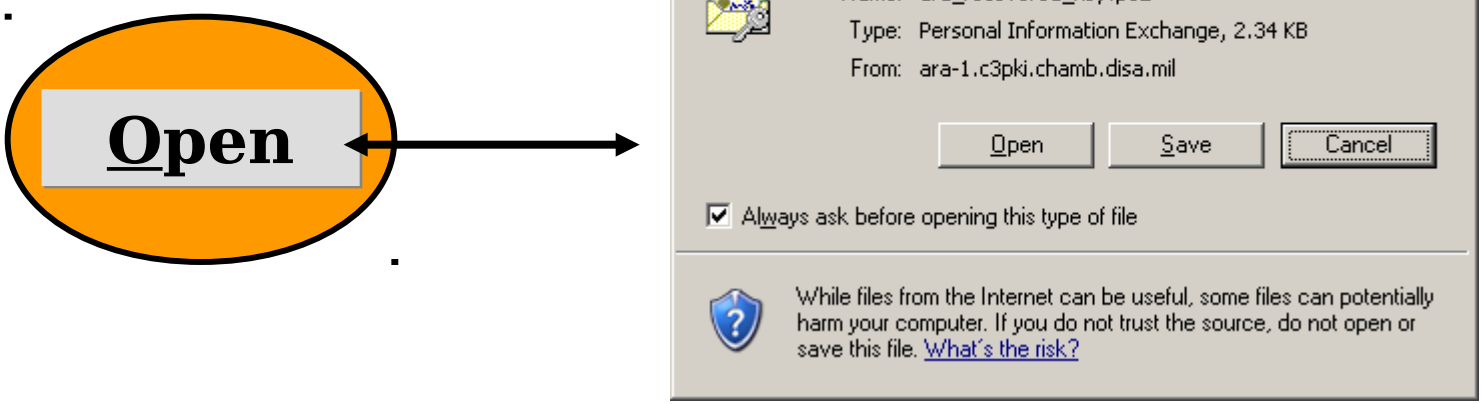
One-time PIN


Auto Key Recovery - Recovered Key - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Address https://ara-1.c3pki.chamb.disa.mil/ara/Key?value=57466
DEFENSE INFORMATION SYSTEMS AGENCY
Global Net-Centric Solutions -- The Warfighter's Edge
Automated Key Recovery
For Official Use Only
The Automated Key Recovery Agent has recovered your key.
To retrieve your key. select the following link:
DOWNLOAD NOBLE.PHILIP.EUGENE.1184204718__0x01B42B5__DOD_E_CA-12
Following is the one-time password you will need to restore your key.
Please write it down since it will not be available again.
9Gh2rk3Pazfird#X
Back to List
Logout
To restore your key to your Internet Explorer browser, perform the following steps:
1) The Recovered Key will be automatically presented to your browser. You can choose to either save the key to your file system, or open it. If you choose to save it, you can later import the key to your browser using the toolbar 'Tools->Internet Options', select the 'Content' tab and 'Certificates' button, and press 'Import'. Then follow the instructions below.
2) In Wizard, select Next, if opening from file Browse to the filename and Select Next.
3) Enter the password as displayed when your recovered key was returned to you and then Next.
4) Leave the 'Automatically Select the Certificate Store' selected, unless you have other needs.
5) Press 'Finish', and your key will appear in your browser keystore.
https://ara-1.c3pki.chamb.disa.mil/ara/Key/NOBLE.PHILIP.EUGENE.1184204718__0x01B42B5__DOD_E_CA-12.p12
Trusted sites

This is your one-time PIN to access your Private Encryption Key if it's saved as a separate file.

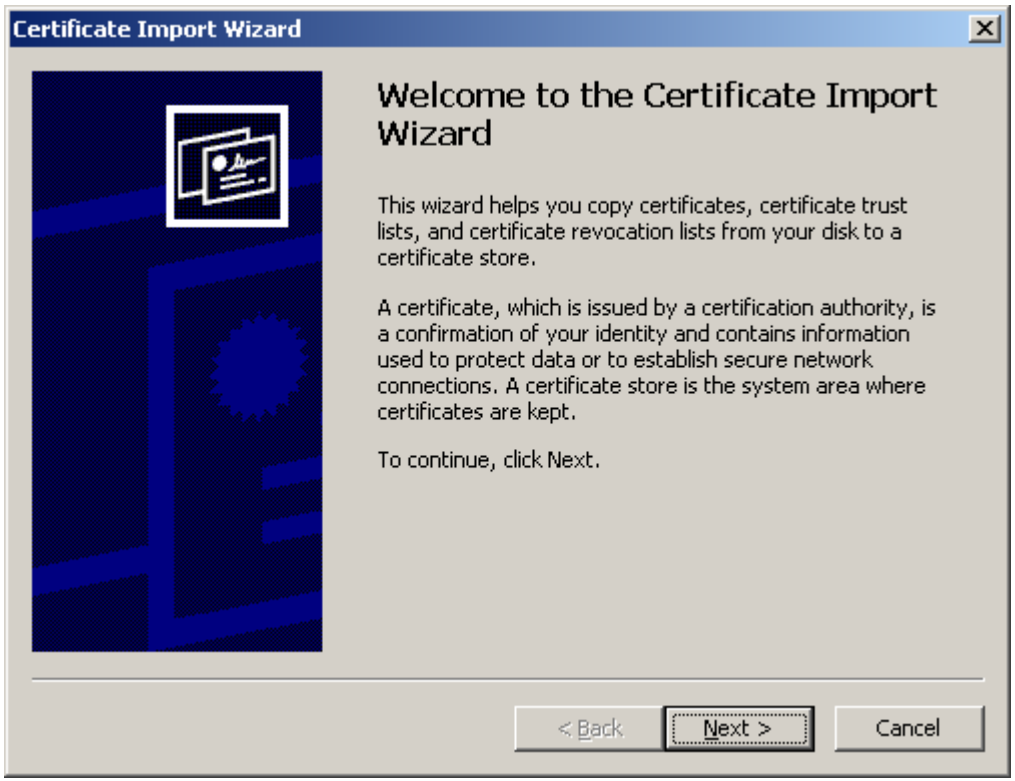
Also, you will find instructions for both Netscape and Internet Explorer web browsers.

Installing the Certificate


Open
File Download
Do you want to open or save this file?
Name: ara_recovered_key.p12
Type: Personal Information Exchange, 2.34 KB
From: ara-1.c3pki.chamb.disa.mil
Open
Save
Cancel
Always ask before opening this type of file
While files from the Internet can be useful, some files can potentially harm your computer. If you do not trust the source, do not open or save this file. What's the risk?

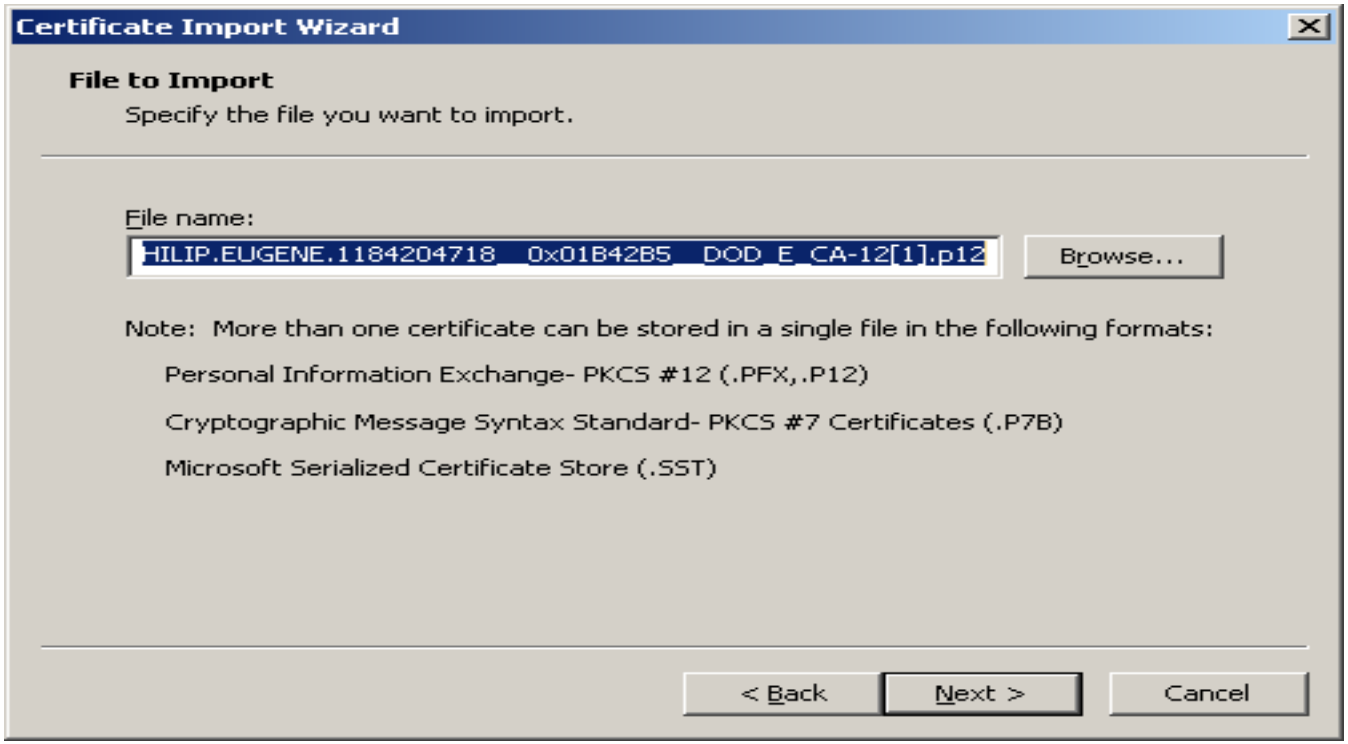
You will be given the opportunity to install the certificate, click "Open".

Installing the Certificate (Cont'd)


Certificate Import Wizard
Welcome to the Certificate Import Wizard
This wizard helps you copy certificates, certificate trust lists, and certificate revocation lists from your disk to a certificate store.
A certificate, which is issued by a certification authority, is a confirmation of your identity and contains information used to protect data or to establish secure network connections. A certificate store is the system area where certificates are kept.
To continue, click Next.
< Back
Next >
Cancel

Click "Next".

Installing the Certificate (Cont'd)


Certificate Import Wizard
File to Import
Specify the file you want to import.
File name:
HILIP.EUGENE.1184204718_0x01B42B5_DOD_E_CA-12[1].p12
Browse...
Note: More than one certificate can be stored in a single file in the following formats:
Personal Information Exchange- PKCS #12 (.PFX,.P12)
Cryptographic Message Syntax Standard- PKCS #7 Certificates (.P7B)
Microsoft Serialized Certificate Store (.SST)
< Back
Next >
Cancel

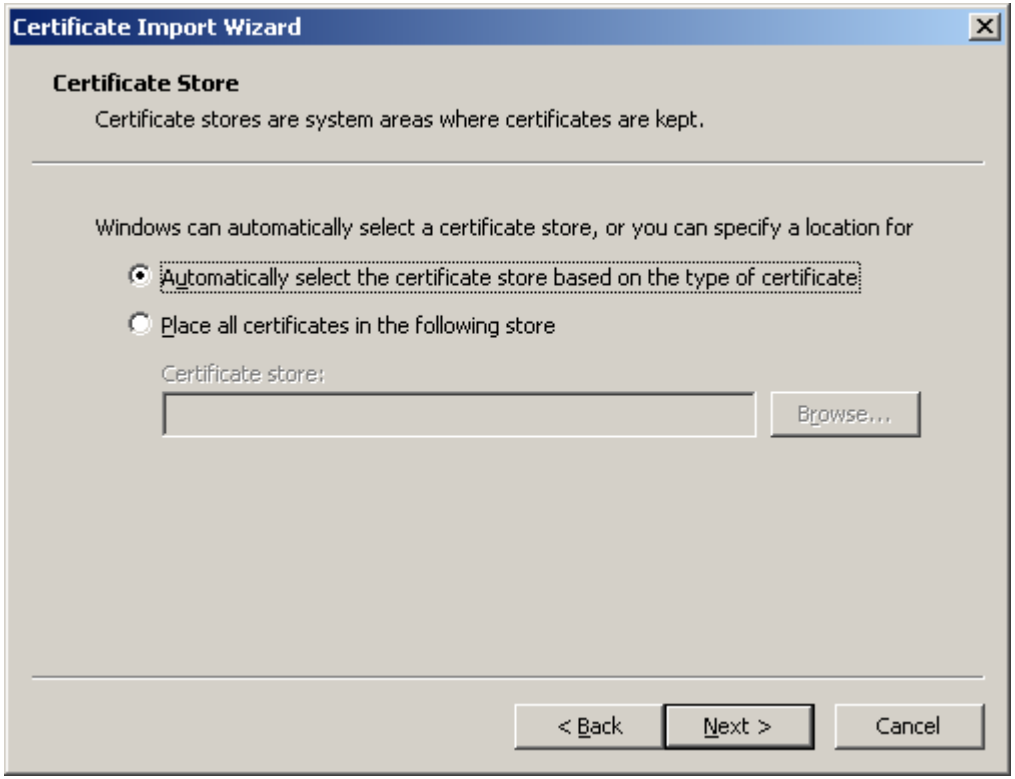
Click "Next".

Installing the Certificate (Cont'd)

Certificate Import Wizard
Password
To maintain security, the private key was protected with a password.
Type the password for the private key.
Password:
Enable strong private key protection. You will be prompted every time the private key is used by an application if you enable this option.
Mark this key as exportable. This will allow you to back up or transport your keys at a later time.
< Back
Next >
Cancel

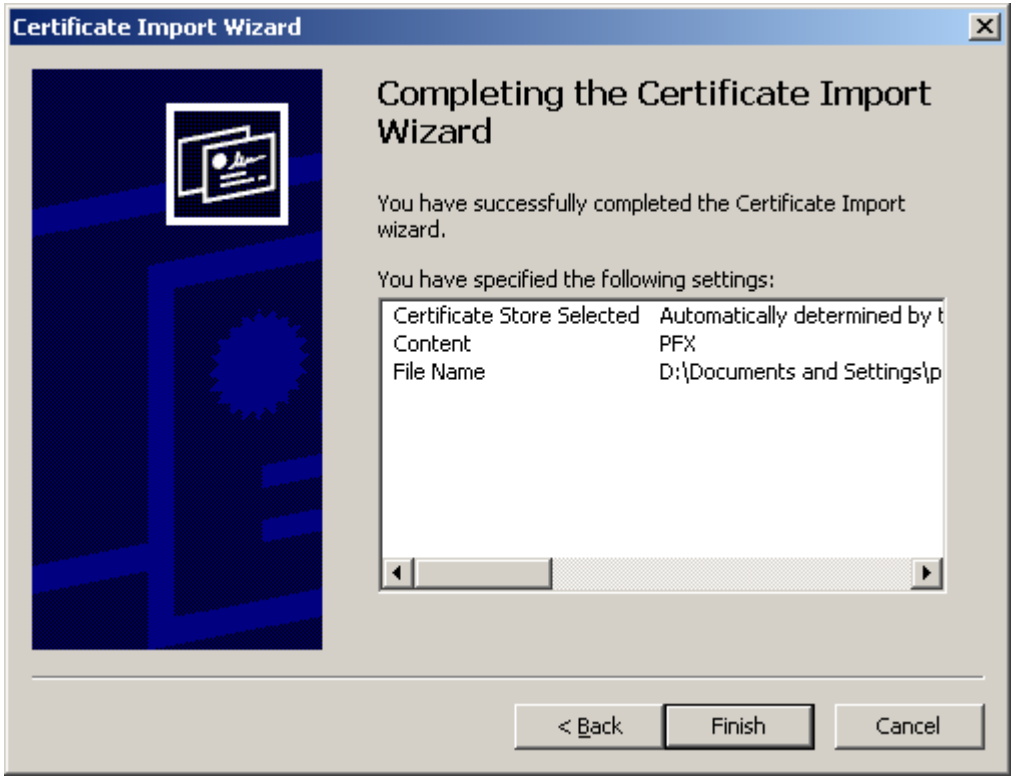
Leave the check blocks unchecked, enter your Password, and click "Next".

Installing the Certificate (Cont'd)


Certificate Import Wizard
Certificate Store
Certificate stores are system areas where certificates are kept.
Windows can automatically select a certificate store, or you can specify a location for
Automatically select the certificate store based on the type of certificate
Place all certificates in the following store
Certificate store:
Browse...
< Back
Next >
Cancel

Ensure that *"Automatically select the certificate store based on the type of certificate"* is selected (as shown above) and click "Next".

Installing the Certificate (Cont'd)



Click "Finish".

Installing the Certificate (Cont'd)

Click "OK"

Installing the Certificate (Cont'd)

Click "OK".

Medium Security is Not a Choice

If Medium Security is blocked and High Security is default, refer to:

http://blogs.technet.com/b/pki/archive/2009/06/17/what-is-a-strong-key-protection-in-windows.aspx

Use gpedit.msc:

- Local computer policy
  - Windows settings
    - Security settings
      - Local policies
        - Security options

Temporarily set - **System Cryptography: Force Strong Protection for User Keys Stored on the Computer** to **User Input is Not Required When New Keys are Stored and Used**

After the key is imported, change the setting to – **User Must Enter a Password Each Time They Use a Key**

Importing The Recovered Key

From MEPCOM:

During the process of importing the certificate, the user receives the following Password Error no matter what password is entered : **‘The password supplied does not meet the minimum complexity requirements’. Almost simultaneously the following error appears: ‘Windows has encountered a critical problem and will restart automatically in one minute’. The error condition has also been encountered during the process of attempting to recover email certificates. In many cases, local security policies may not allow the use of ‘Medium Security’ from the previous page.**

Importing The Recovered Key

Solution: The enpasflt.dll is in use and must be unloaded to correct the issue. Log into the computer using an account with administrative rights to complete the following:

- Click Start | Type **regedit | Press Enter**
- Navigate to HKLM\System\CurrentControlSet\Control\LSA | Navigate to Notification Packages in the right pane
- Remove the **enpasflt entry | Ensure that the scecli entry remains**
- Restart the computer

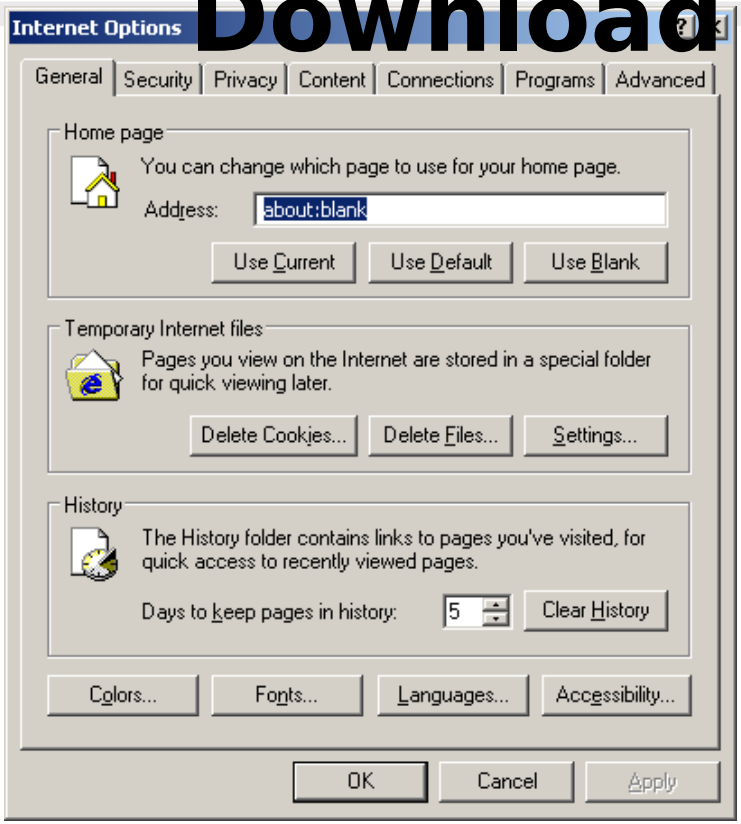
Note: After the certificates have been loaded or recovered, you will need to re-install the EnPasFlt

- Navigate to C:\Windows\AGMSupport\EnPasFIt
- Double Click **Installer.exe**

Note: This install is silent and applies immediately

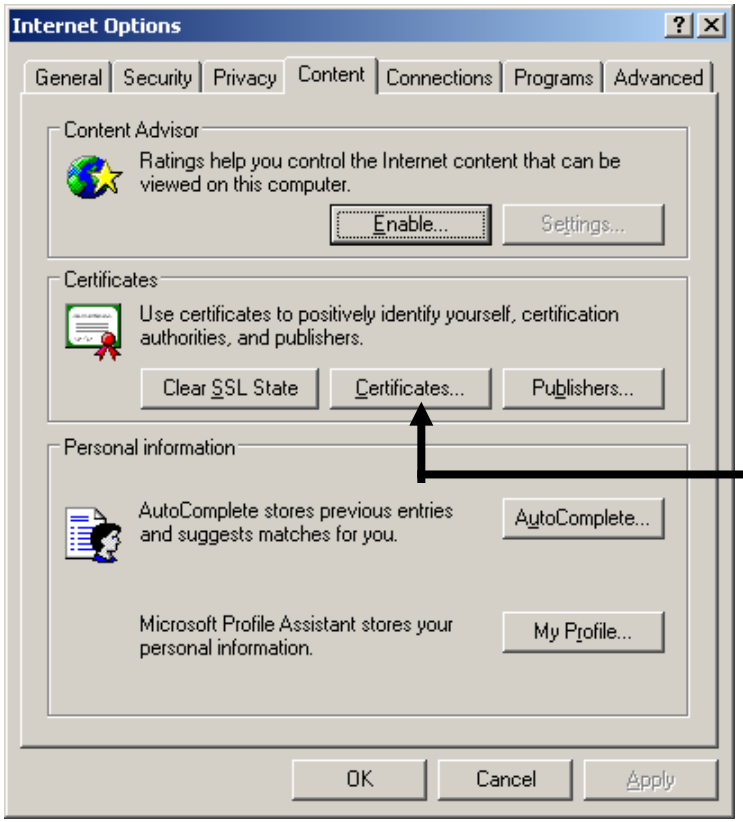
- Open **regedit**
- Navigate to HKLM\System\CurrentControlSet\Control\LSA\Notification Packages
- Ensure that the **enpasflt entry is present**
- Close **regedit**

Verifying the Download



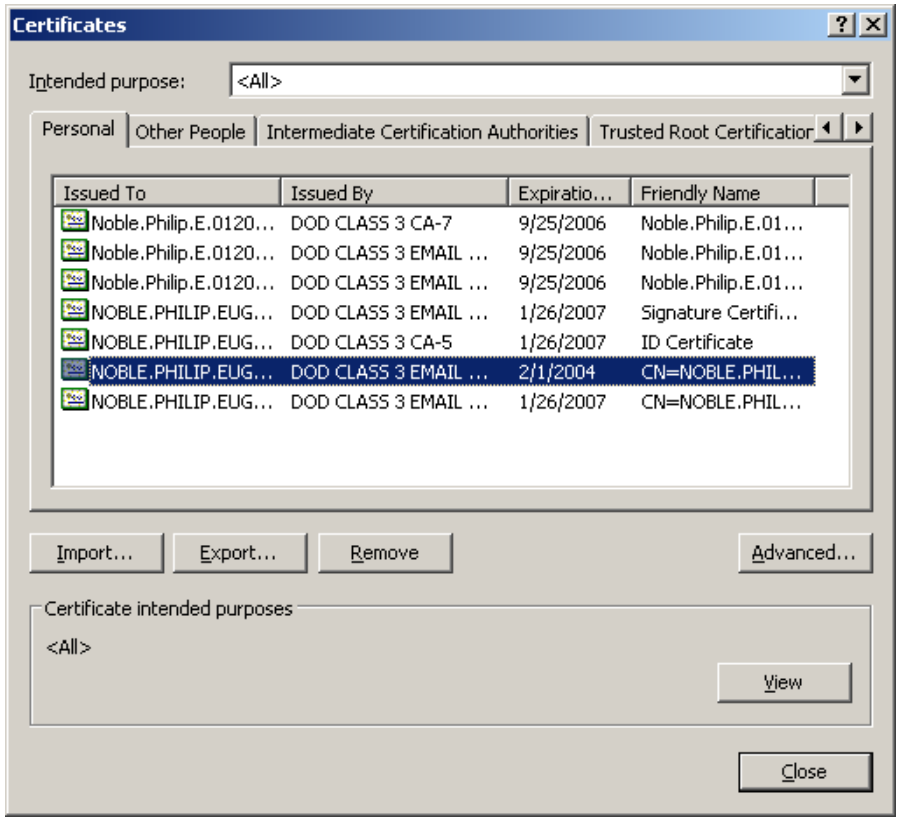
You can verify the successful download of your recovered Private Encryption Key by performing the following; Launch Internet Explorer, select “Tools” from the menu, and then “Internet Options”.

Verifying the Download (Cont'd)



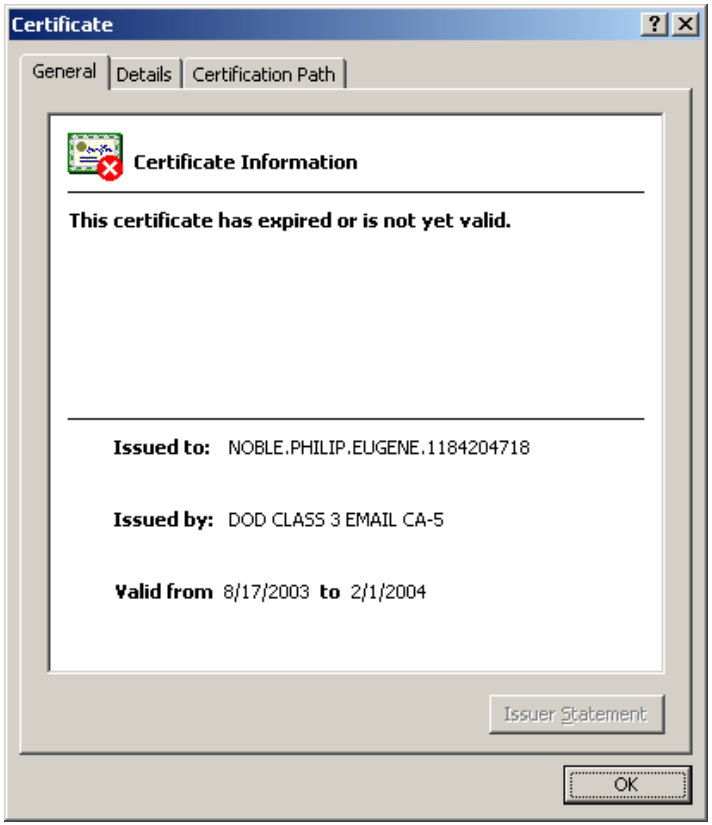
Click the "Content" tab. Now, click "Certificates".

Verifying the Download (Cont'd)



Select the "Personal" tab and you will see a list of your currently registered certificates, including the recovered new key certificate.

Verifying the Download (Cont'd)



Double-click on the certificate and you can view the specifics of your recovered key (or other current keys) as illustrated above.

Success

Close the open window, you may now use the recovered key to access your encrypted email.

Last Step: If you chose to save the recovered key to a file instead of directly installing the key, delete the saved .P12 file from your computer as this is a security vulnerability and will be detected in a Q-tip Scan. Disregard if you did not save the key to a file

Should recovery fail, contact the Army Key Recovery Agent by sending a signed email to:
usarmy.pentagon.hqda-cio-g-6.mbx.army-registration-authority@mail.mil
requesting recovery of your private email encryption key

Other Services

SPAWAR Integrated Support Center Helpdesk
https://infosec.navy.mil/PKI/
Email: itac@infosec.navy.mil
Phone: 800-304-4636
DSN 588-4286

USMC RA Operations Helpdesk
Email: raoperations@mcnosc.usmc.mil
Phone: 703-432-0394

Air Force PKI Help Desk
Phone: 1-210-925-2521
Email: afpki.ra@lackland.af.mil
https://afpki.lackland.af.mil/html/lracontacts.asp (this site is accessible from .mil domains only)
Additional Air Force PKI support is available from the Air Force PKI help desk:
https://afpki.lackland.af.mil/html/help_desk.asp

DISA PKI Help Desk Oklahoma City, OK Support:
E-Mail: Okc-dodost@csd.disa.mil
Phone (Commercial): 1-800-490-1643
Phone (DSN): 339-5600

Recovery Notification Example

A user has attempted to recover a key using the Automated Key Recovery Agent. The ID Certificate used for Authentication was: CN=NOBLE.PHILIP.EUGENE.1184204718,OU=USA,OU=PKI,OU=DOD,O=U.S. GOVERNMENT,C=US, Serial: 0x0B5643, Issuer: DOD CLASS 3 CA-5. The key that was recovered was: CN=NOBLE.PHILIP.EUGENE.1184204718,OU=USA,OU=PKI,OU=DOD,O=U.S. GOVERNMENT,C=US, Serial: 0x0C8747, Issuer: DOD CLASS 3 EMAIL CA-3.

If you did not perform this operation, please contact your local key recovery agent and ask that they check the logs for the key recovery at Fri Jul 01 16:48:12 GMT 2005 with session ID 1.c3pki.chamb.disa.mil-23f%3A42c57335%3A68e46e9395fb9727.

You will receive an email from PKI_ChambersburgProcessingElement@csd.disa.mil with a subject "ALERT! Key Recovery Attempt

Using Automated Key Recovery Agent" similar to the above Recovery Notification example notifying you of your recovery action.

POC for Additional Information

Philip E. Noble
USAISEC
Information Assurance and Security Engineering Directorate (IASED)
DSN 879-7608
CML 520-538-7608
FAX DSN 879-8709 CML 520-538-8709 philip.e.noble.civ@mail.mil
philip.noble@us.army.smil.mil
philip.noble@us.army.smil.mil